

Claims:

1. An air handling system for an indoor space comprising

a forced indoor air treatment component,

an input indoor air duct element and an output treated air duct element respectively
coupling said indoor air treatment component to said indoor space,

a forced fresh air ventilator component for discharging stale air from the indoor space to an
outdoor environment and for replacing the discharged air with make-up air from the outdoor
environment, said fresh air ventilator component comprising stale air input means coupled to a
stale air output means and make-up air input means coupled to a return air output means

a stale air duct element coupled to said stale air input means and to said input indoor air duct
element,

a return air duct element coupling said return air output means to said output treated air duct
element

characterized in that said system comprises

a secondary air path means for coupling said return air output means to said input indoor air duct
element.

2. A system as defined in claim 1 comprising

a first air flow control means comprising a first damper element associated with said return air
duct element, said first damper element being independently displaceable between a blocking
configuration and a non-blocking configuration,

a second air flow control means comprising a second damper element associated with said
secondary air path means, said second damper element being independently displaceable
between a blocking configuration and a non-blocking configuration,

wherein in said respective blocking configuration, said first and second damper elements are respectively disposed to close off said return air duct element and said secondary air path means to air flow, and in said respective non-blocking configuration, said first and second damper elements are respectively disposed such that air is able to circulate through said return air duct element and said secondary air path means,

wherein said second air flow control means is configured such that, when an indoor air treatment component air blower means associated with said forced indoor air treatment component and a ventilation air blower means associated with said forced fresh air ventilator component are both activated, said second damper element is in said non-blocking configuration and

wherein said first and said second air flow control means are each configured such that, when only the ventilation air blower means is activated, said first damper element is in said non-blocking configuration and said second damper element is in said blocking configuration.

3. A system as defined in claim 1 wherein said forced indoor air treatment component is a forced air furnace component and said output treated air duct element is an output heated air duct element.

4. A system as defined in claim 3 wherein said secondary air path means comprises a reflux air duct element coupled to said return air duct element and to said input indoor air duct element.

5. A system as defined in claim 4 comprising

a first air flow control means comprising a first damper element associated with said return air duct element, said first damper element being independently displaceable between a blocking configuration and a non-blocking configuration,

a second air flow control means comprising a second damper element associated with said reflux air duct element, said second damper element being independently displaceable between a blocking configuration and a non-blocking configuration,

5 wherein in said respective blocking configuration, said first and second damper elements are respectively disposed to close off said return air duct element and said reflux air duct element to air flow, and in said respective non-blocking configuration, said first and second damper elements are respectively disposed such that air is able to circulate through said return air duct element and said reflux air duct element,

10 wherein said second air flow control means is configured such that, when a furnace air blower means associated with said forced air furnace component and a ventilation air blower means associated with said forced fresh air ventilator component are both activated, said second damper element is in said non-blocking configuration

15 and wherein said first and said second air flow control means are each configured such that, when only the ventilation air blower means is activated, said first damper element is in said non-blocking configuration and said second damper element is in said blocking configuration.

20 6. A system as defined in claim 5 wherein said first and said second air flow control means are each configured such that, when a furnace air blower means associated with said forced airfurnace component and a ventilation air blower means associated with said forced fresh air ventilator component are both activated, said first damper element and said second damper element are each in said non-blocking configuration.

25 7. A system as defined in claim 5 wherein said first and said second air flow control means are each configured such that, when only said furnace air blower means is activated, said first damper element and said second damper element are each in said blocking configuration.

8. A system as defined in claim 5 wherein said first and said second air flow control means are each configured such that, when only the ventilation air blower means is activated, said first damper element is in said non-blocking configuration and said second damper element is in said blocking configuration.

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9. A system as defined in claim 5 wherein said first and said second air flow control means are each configured such that, when both the furnace air blower means and the ventilation air blower means are unactivated, said first damper element and said second damper element are each in said blocking configuration.

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10. A system as defined in claim 5 wherein said stale air duct is coupled to said input indoor air duct element at a first position upstream of said furnace and said reflux air duct element is coupled to said input indoor air duct element at a second position downstream of said first position and upstream of said furnace.

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11. A system as defined in claim 5 wherein said first air flow control means comprises a first biasing element biasing said first damper element in said blocking configuration and wherein said second air flow control means comprises a second biasing element biasing said second damper element in said blocking configuration.

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12. A system as defined in claim 4 wherein said return air duct element comprises a manifold element, said manifold element comprising an air inlet, a first air outlet and a second air outlet, said air inlet being coupled to said return air output means, said first outlet being coupled to said output heated air duct element so as to define an upstream connection between the manifold element and the output heated air duct element, said reflux air duct element being coupled to said second outlet, said first damper element being associated with said upstream connection.

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13. A system as defined in claim 12 wherein said first damper element is associated with said first air outlet.

14. A system as defined in claim 13 wherein, said second damper is associated with said second air outlet.

15. A system as defined in claim 4 wherein said forced fresh air ventilator component comprises heat recovery means for exchanging heat between the discharged air and the make-up air.

16. A system as defined in claim 4 comprising control means electrically coupled to the furnace blower means and the ventilation air blower means for independently electrically actuating same.

17. A system as defined in claim 11 wherein said first air flow control means and said second air flow control means are each configured such that said first damper element and said second damper element are each respectively air pressure displaceable from said blocking configuration to said non-blocking configuration.

18. A system as defined in claim 12 wherein said stale air duct element is coupled to said input indoor air duct element at a first position upstream of said furnace and said reflux air duct element is coupled to said input indoor air duct element at a second position downstream of said first position and upstream of said furnace.

19. A system as defined in claim 18 wherein said first air flow control means comprises a first biasing element biasing said first damper element in said blocking configuration and wherein said second air flow control means comprises a second biasing element biasing said second damper element in said blocking configuration.

20. A system as defined in claim 19 wherein said first air flow control means and said second air flow control means are each configured such that said first damper element and said second damper element are each respectively air pressure displaceable from said blocking configuration to said non-blocking configuration.

21. A system as defined in claim 20 wherein said forced fresh air ventilator component comprises heat recovery means for exchanging heat between the discharged air and the make-up air.

22. A system as defined in claim 21 wherein said first damper element is associated with said first air outlet.

23. A system as defined in claim 22 wherein, said second damper element is associated with said second air outlet.

24. A system as defined in claim 5 wherein said first and said second air flow control means are each configured such that, when only said furnace air blower means is activated, said first damper element and said second damper element are each in said blocking configuration and wherein said first and said second air flow control means are each configured such that, when only the ventilation air blower means is activated, said first damper element is in said non-blocking configuration and said second damper element is in said blocking configuration.

25. A system as defined in claim 24 wherein said return air duct element comprises a manifold element, said manifold element comprising an air inlet, a first air outlet and a second air outlet, said air inlet being coupled to said return air output means, said first outlet being coupled to said heated air duct element so as to define an upstream connection between the manifold element and the heated air duct element, said reflux air duct element being coupled to said second outlet, said first damper element being associated with said upstream connection.

26. A system as defined in claim 25 wherein said stale air duct element is coupled to said input indoor air duct element at a first position upstream of said furnace and said reflux air duct

element is coupled to said input indoor air duct element at a second position downstream of said first position and upstream of said furnace.

27. A system as defined in claim 26 wherein said first air flow control means comprises a first
5 biasing element biasing said first damper element in said blocking configuration and wherein
said second air flow control means comprises a second biasing element biasing said second
damper element in said blocking configuration.

28. A system as defined in claim 27 wherein said first air flow control means and said second
10 air flow control means are each configured such that said first damper element and said second
damper element are each respectively air pressure displaceable from said blocking configuration
to said non-blocking configuration.

29. A system as defined in claim 28 wherein said forced fresh air ventilator component
15 comprises heat recovery means for exchanging heat between the discharged air and the make-up
air.

30. A system as defined in claim 29 wherein said first damper element is associated with said
20 first air outlet.

31. A system as defined in claim 30 wherein, said second damper element is associated with
said second air outlet.

32. An air manifold element, for an air handling system for an indoor space said air handling
25 system comprising

- a forced indoor air treatment component,
- an input indoor air duct element and an output treated air duct element respectively
- coupling said indoor air treatment component to said indoor space,
- a second forced air treatment component

a stale air duct element coupled to said second forced air treatment component and to said input indoor air duct element,

a return air duct element coupling said second forced air treatment component to said heated air duct element

5 and

a secondary air path means for coupling said return air duct element to said input indoor air duct element.

10 said manifold element comprising an air inlet, a first air outlet, a second air outlet, a first damper element associated with said first air outlet, a second damper element associated with said second air outlet, said air inlet being configured for being coupled to said return air duct element, said first air outlet being configured for being coupled to said output treated air duct element so as to define an upstream connection between the manifold element and the output treated air duct element, said second air outlet being configured for being coupled to said
15 secondary air path means.

33. An air handling system for an indoor space comprising

a first forced indoor air treatment component,

an input indoor air duct element and an output treated air duct element respectively

20 coupling said first forced indoor air treatment component to said indoor space,

a second forced air treatment component

a stale air duct element coupled to said second forced air treatment component and to said input indoor air duct,

25 a return air duct element coupling said second forced air treatment component to said output treated air duct element

characterized in that said system comprises

a secondary air path means for coupling said return air duct element to said input indoor air duct element.